

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 0 685 014 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:
21.05.1997 Bulletin 1997/21

(21) Application number: 94905990.0

(22) Date of filing: 22.02.1994

(51) Int Cl.: D06Q 1/14, B32B 5/08

(86) International application number:
PCT/IE94/00008

(87) International publication number:
WO 94/19630 (01.09.1994 Gazette 1994/20)

(54) **A LAMINATED ARTICLE**
VERBUNDKÖRPER
STRATIFIE

(84) Designated Contracting States:
AT BE CH DE DK ES FR GB GR IE IT LI LU MC NL
PT SE

(30) Priority: 22.02.1993 IE 930122

(43) Date of publication of application:
05.12.1995 Bulletin 1995/49

(73) Proprietor: Hiveweld Limited
Kinsale, County Cork (IE)

(72) Inventors:
• KAY, Christopher
County Cork (IE)

• LION, Jean, Pierre
F-53000 Laval (FR)

(74) Representative: O'Brien, John Augustine et al
Cruickshank & Co.
1 Holles Street
Dublin 2 (IE)

(56) References cited:
FR-A- 2 659 064 GB-A- 2 010 123
GB-A- 2 245 220 US-A- 4 652 478
US-A- 5 059 452

EP 0 685 014 B1

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

1

EP 0 685 014 B1

2

Description

The invention relates to laminated articles and in particular to an appliqué for applying to fabric garments and other textile substrates.

GB-A-2,010,123 describes a lining material, particularly for the interior lining of motor vehicle roofs and accessories. The roof lining material comprises a PVC calendered sheet, a layer of adhesive applied to an upper surface of the calendered sheet and fibres which may be flocked onto the adhesive.

US-A-5,059,452 describes a flocked polyurethane fabric, wherein the possibility of selectively applying fibres of dissimilar colors to achieve consistency in color on flocked fabric is disclosed.

FR-A-2659094 describes an appliqué comprising an adhesive polyvinylchloride material laminated onto a paper backing sheet which is then fully flocked in a single colour flock material. The sheet and flock is then cut up into individual badges or motifs for application by high frequency welding to a textile substrate.

It is further known that the flock fibres may be screen printed, in the case of a multicoloured article, with desired colours to form a required badge or motif.

There are a number of problems with such conventional appliques. The main difficulty is the processing difficulty involved in screen printing a desired image onto the flock material. Different coloured inks are required which must be applied in a number of different stages and the badge thus formed must be cured at high temperature. Conventionally, the flock fibres are of rayon viscose (1.7 DTEX) 0.5mm flock which is adapted to receive the necessary screen printing ink. The abrasion resistance of the badge thus formed is often not satisfactory. Further, the colours in the badge are often not sufficiently stable in repeated machine washing of the garment to which the badge is applied. In addition, the fibres have a relatively rough feel and consequently often detract from the feel of the garment to which they are applied. The applied print has a stiff mounting handle on the fabric which also detracts from the product.

This invention is directed towards providing an appliqué which will overcome at least some of these difficulties.

According to the invention there is provided an appliqué comprising:-

- a base layer of plastics sheet material;
- an adhesive applied to one side of the base layer; and
- a layer of flocked fibres on the adhesive;
- characterised in that said layer of flocked fibres is a layer of pre-dyed flock fibres which are flocked onto the adhesive through a screen having openings for the flock fibres corresponding to at least portion of a de-

sired motif or pattern.

In one embodiment of the invention the flock fibres are of synthetic fibre, preferably polyamide fibre, most preferably of polyamide fibres (3.3 DTEX) 1mm. These fibres give a partially plush finish. In a preferred embodiment of the invention at least two and possibly several different coloured flock fibres are flocked onto the adhesive. Preferably flock fibres of different colours are applied in sequential flocking steps. For ease of processing preferably the fibres are flocked onto the adhesive in a desired motif or pattern through separate screens.

In a particularly preferred embodiment of the invention the appliqué includes a support layer on which the base layer is supported. This assists in achieving dimensional stability. For ease of removal, preferably the base layer is peelably attached to the support layer. In a preferred embodiment of the invention the support layer is of stiff paper material or similarly adapted substrate.

In a preferred arrangement the adhesive is applied to the base layer only in the region to which the flock fibres are to be flocked. Preferably the adhesive is applied to the base layer through a screen.

The flock receiving adhesive is selected to be compatible with both the flock fibres and the base material. Typically the adhesive is compatible with the polyamide fibres and polyvinylchloride film material.

Typically the base layer is of polyvinylchloride film material which is suitable for fixing to a fabric by high frequency welding.

The invention also provides a method of forming an appliqué carrying a motif or badge to be applied to a fabric comprising the steps of:-

applying an adhesive to a base layer of plastics sheet material; and

flocking pre-dyed flock fibres of one colour onto the adhesive through a screen having openings for the flock fibres corresponding to at least portion of a desired motif or pattern.

Preferably there are at least two different coloured flock fibres and the method includes flocking flock fibres of at least several colour flock fibres onto the adhesive in a desired sequence to form a desired coloured motif.

Preferably the adhesive is applied to the base layer only in the region to which the fibres are to be flocked. Typically the adhesive is applied to the base layer through a screen.

In a preferred embodiment of the invention the flock fibres are applied to the adhesive through a screen.

Typically there are at least two different coloured flock fibres which are applied to the adhesive in sequential flocking steps. Most preferably the coloured flock fibres are flocked onto the adhesive through separate screens.

Preferably the method includes the step prior to applying the adhesive, of providing a support layer for the

thermoplastic base layer.

In one embodiment of the invention the adhesive is cured after application of the flock fibres.

The invention further provides a method of applying an appliqué according to the invention to a fabric support comprising the step of:-

removing the support layer, if present, and welding the appliqué to the fabric support by high frequency welding.

In a preferred arrangement the method further includes the step, prior to welding, of interposing a layer of foam or the like material between the base layer of the appliqué and the fabric support.

The invention will be more clearly understood from the following description thereof given by way of example only with reference to the accompanying drawings, in which:-

Fig. 1 is a diagrammatic cross sectional view of an appliqué according to the invention;

Fig. 2 is a diagrammatic cross sectional view illustrating the application of the article of Fig. 1; and

Figs. 3a to 3f are schematic drawings of various steps used in the method of the invention.

Example

To form an appliqué in accordance with the invention a high frequency weldable plastics such as polyvinylchloride sheet or film having a thickness of between 0.15mm and 0.30 mm forming a base layer is applied onto a support layer, preferably by a flow process in which the PVC in a liquid form is applied to the support layer. The support layer in the preferred arrangement is of a stiff paper material which allows the plastics film to be easily peeled off the support layer after processing. Furthermore, the application of the PVC onto a support layer facilitates the subsequent processing of the product whilst maintaining the dimensional stability of the PVC when subjected to heating.

A layer of permanent adhesive is applied to the upper side of the base layer of polyvinylchloride film material. The adhesive is applied through a screen only to the area of the base layer on which a desired motif or badge is required. The adhesive is compatible with both polyamide fibres and PVC.

Polyamide fibres of (3.3. DTEX) 1mm are flocked onto the adhesive using conventional flocking techniques. The fibres are flocked onto the adhesive to produce a desired motif or badge on the polyvinylchloride base film. In the case of a multicoloured motif or badge the fibres are flocked onto the adhesive in a desired sequence using separate screens for each colour. The appliqué thus formed is then treated, typically at 180°C for approximately three minutes to cure the adhesive and to ensure permanent adhesion of the flock fibres to the

base polyvinylchloride adhesive.

The sheet of flocked film material thus formed has a plurality of appliqué badges or motifs spaced apart therealong. This sheet is then cut up into individual appliqués which may be applied to textiles or other substrates, after removal of the backing paper using conventional high frequency welding techniques. If an additional three dimensional effect is required a layer of polyurethane foam may be interposed between the PVC film and the fabric to which the appliqué is to be attached. Referring to the drawings and initially to Fig. 1 there is illustrated an appliqué according to the invention and indicated generally by the reference numeral 1. The appliqué 1 comprises a support layer 2 of paper material coated with a release agent. A PVC base layer 3, which is typically 0.15 to 0.3 mm thick is applied, for example in a liquid form, onto the paper support sheet 2. An adhesive 4 which is compatible with the PVC sheet and with polyamide flock fibres 5 is then applied onto the PVC sheet 3 through a screen 20. The adhesive is a plastic polyvinyl chloride based adhesive, made up of a PVC resin, with an appropriate plasticizer blend and corresponding curing agents and stabilizer.

The polyamide flock fibres 5 are typically 1 mm (3.3 DTEX) and are electrostatically flocked in one or more colours, in sequence, onto the pattern of the adhesive 4. The fibres are flocked onto the adhesive using a screen to achieve a desired motif or badge. In the case of a multicoloured badge or motif the fibres are applied sequentially through different screens for each colour fibre. In the particular case illustrated there are two different coloured flock fibres identified as 5(a) and 5(b) which are flocked in sequence and in register with one another through separate screens 21, 22 respectively.

After flocking in sheet form and heat curing, each sheet is cut up into individual appliqués.

Referring to Fig. 2 to apply an appliqué produced as described above, the paper base layer 2 is peeled off and the PVC sheet 3 is placed directly onto a textile fabric 10. The PVC is welded to the fabric by conventional high frequency welding techniques using a metal die 13. Alternatively, a layer 12 of PVC foam material may be sandwiched between the textile substrate 10 and the PVC sheet 3 to achieve a three dimensional effect.

After welding with the metal die 13, the excess parts of the PVC sheet are removed by peeling leaving the desired appliqué welded to the textile substrate 10.

The appliqué according to the invention is readily formed and applied and has improved colour fastness and stability after repeated machine washings of the garment to which it is applied. Further, the appliqué has superior tactile properties to conventional appliqués.

The use of polyamide fibres pre-dyed by conventional techniques gives the substantial advantages mentioned above. In addition, the fibres have improved light fastness, wet and dry rubbing fastness and improved abrasion resistance. The use of these fibres rep-

resents in particular a substantial improvement over fibres which are screen printed after application.

As a consequence of these advantages the appliqués of the invention may be used in high specification applications such as in the motor vehicle industry. Con-

the base material, preferably the adhesive is compatible with both polyamide fibres and polyvinylchloride film material.

5

EP 0 685 014 B1

6

resents in particular a substantial improvement over fibres which are screen printed after application.

As a consequence of these advantages the appliques of the invention may be used in high specification applications such as in the motor vehicle industry. Conventional appliques have not heretofore been used in such industries because of the disadvantages of conventional products and processes.

The invention is not limited to the embodiments hereinbefore described which may be varied in both construction and detail.

Claims

1. An appliqué comprising :-

a base layer of plastic sheet material;

an adhesive applied to one side of the base layer;

and a layer of flocked fibres on the adhesive;

characterised in that said layer of flocked fibres is a layer of pre-dyed flock fibres which are flocked onto the adhesive through a screen having openings for the flock fibres corresponding to at least a portion of a desired motif or pattern.

2. An appliqué as claimed in claim 1 wherein at least two different coloured flock fibres are flocked onto the adhesive.

3. An appliqué as claimed in claim 2 wherein flock fibres of different colour are applied in sequential flocking steps.

4. An appliqué as claimed in claim 2 or 3 wherein the fibres are flocked onto the adhesive in a desired motif or pattern through separate screens.

5. An appliqué as claimed in any preceding claim wherein the flock fibres are of synthetic fibre material, preferably of polyamide fibre, preferably (3.3 DTEX) 1mm.

6. An appliqué as claimed in any preceding claim wherein the adhesive is applied to the base layer only in the region to which the flock fibres are to be flocked.

7. An appliqué as claimed in claim 6 wherein the adhesive is applied to the base layer through a screen.

8. An appliqué as claimed in any preceding claim wherein the flock receiving adhesive is an adhesive which is compatible with both the flock fibres and

the base material, preferably the adhesive is compatible with both polyamide fibres and polyvinylchloride film material.

9. An appliqué as claimed in any preceding claim wherein the base layer is of polyvinylchloride film

10. An appliqué as claimed in any preceding claim wherein the applique includes a support layer on which the base layer is supported.

11. An appliqué as claimed in claim 10 wherein the base layer is peelably attached to the support layer, preferably the support layer is of stiff paper material.

12. A method of forming an appliqué carrying a motif or badge to be applied to a fabric comprising the steps of :-

applying an adhesive to a base layer of plastic sheet material; and

flocking pre-dyed flock fibres onto the adhesive through a screen having openings for the flock fibres corresponding to at least a portion of a desired motif or pattern.

13. A method as claimed in claim 12 wherein there are at least two different coloured flock fibres and the method includes flocking second colour flock fibres onto the adhesive to form a desired coloured motif.

14. A method as claimed in claim 12 or 13 wherein the adhesive is applied to the base layer only in the region to which the fibres are to be flocked.

15. A method as claimed in claim 14 wherein the adhesive is applied to the base layer through a screen.

16. A method as claimed in any of claims 12 to 15 wherein there are at least two different coloured flock fibres which are applied to the adhesive in sequential flocking steps.

17. A method as claimed in claim 16 wherein the coloured flock fibres are flocked onto the adhesive through separate screens.

18. A method as claimed in any of claims 12 to 17 including the step, prior to applying the adhesive, of providing a support layer for the plastic base layer.

19. A method as claimed in any of claims 12 to 18 including the step of curing the adhesive after application of the flock fibres.

20. A method of applying an appliqué as claimed in any of claims 1 to 11 to a fabric support comprising the

7

EP 0 685 014 B1

8

step of :-

removing the support layer, if present, and welding the appliqué to the fabric support by high frequency welding.

21. A method as claimed in claim 20 including the step, prior to welding, of interposing a layer of foam or the like material between the base layer of the appliqué and the fabric support.

Patentansprüche

1. Applikation umfassend: eine Grundschicht aus Kunststoffolienmaterial, einen auf eine Seite der Grundschicht aufgetragenen Klebstoff und eine Schicht aufgeflocter Fasern auf dem Klebstoff, dadurch gekennzeichnet, daß genannte Schicht aufgeflocter Fasern eine Schicht vorgeläuter Flockfasern ist, mit denen der Klebstoff durch ein Sieb mit Öffnungen für die Flockfasern, die mindestens einem Abschnitt eines gewünschten Motive oder Musters entsprechen, befloct wird.
2. Applikation nach Anspruch 1, wobei der Klebstoff mit mindestens zwei verschiedenen farbigen Flockfasern befloct wird.
3. Applikation nach Anspruch 2, wobei Flockfasern unterschiedlicher Farbe in sequentiellen Beflockungsschritten aufgetragen werden.
4. Applikation nach Anspruch 2 oder 3, wobei der Klebstoff durch getrennte Siebe in einem gewünschten Motiv oder Muster mit den Fasern befloct wird.
5. Applikation nach einem der vorangehenden Ansprüche, wobei die Flockfasern aus Kunstfasernmaterial, vorzugsweise aus Polyamidfaser, vorzugsweise (3.3 DTEX) 1 mm, sind.
6. Applikation nach einem der vorangehenden Ansprüche, wobei der Klebstoff nur in dem Bereich auf die Grundschicht aufgetragen wird, der mit den Flockfasern zu beflocten ist.
7. Applikation nach Anspruch 5, wobei der Klebstoff durch ein Sieb auf die Grundschicht aufgetragen wird.
8. Applikation nach einem der vorangehenden Ansprüche, wobei der das Beflockmaterial aufnehmende Klebstoff ein Klebstoff ist, der sowohl mit den Flockfasern als auch mit dem Grundmaterial verträglich ist; vorzugsweise ist der Klebstoff sowohl mit Polyamidfasern als auch mit Polyvinylchloridfolienmaterial verträglich.
9. Applikation nach einem der vorangehenden Ansprüche, wobei die Grundschicht aus Polyvinylchloridfolie ist.
10. Applikation nach einem der vorangehenden Ansprüche, wobei die Applikation eine Trägerschicht aufweist, auf der die Grundschicht aufliegt.
11. Applikation nach Anspruch 10, wobei die Grundschicht abziehbar an der Trägerschicht angebracht ist, wobei die Trägerschicht vorzugsweise aus stattem Papiermaterial ist.
12. Verfahren zum Formen einer auf einem Gewebe aufzubringenden, ein Motiv oder Emblem tragenden Applikation umfassend die folgenden Schritte: Auftragen eines Klebstoffs auf eine Grundschicht aus Kunststoffolienmaterial und Beflocken des Klebstoffs mit vorgeläuter Flockfasern durch ein Sieb mit Öffnungen für die Flockfasern, die mindestens einem Abschnitt eines gewünschten Motive oder Musters entsprechen.
13. Verfahren nach Anspruch 12, wobei es mindestens zwei verschiedene farbige Flockfasern gibt und das Verfahren die Beflockung des Klebstoffs mit zweiten Farbflockfasern zum Bilden eines gewünschten farbigen Motive aufweist.
14. Verfahren nach Anspruch 12 oder 13, wobei der Klebstoff nur in dem Bereich, der mit den Fasern zu beflocten ist, auf die Grundschicht aufgetragen wird.
15. Verfahren nach Anspruch 14, wobei der Klebstoff durch ein Sieb auf die Grundschicht aufgetragen wird.
16. Verfahren nach einem der Ansprüche 12 bis 15, wobei es mindestens zwei verschiedene farbige Flockfasern gibt, die in sequentiellen Beflockungsschritten auf den Klebstoff aufgebracht werden.
17. Verfahren nach Anspruch 16, wobei der Klebstoff durch getrennte Siebe mit den farbigen Flockfasern befloct wird.
18. Verfahren nach einem der Ansprüche 12 bis 17 einschließlich dem Schritt, vor dem Auftragen des Klebstoffs, des Vorsehens einer Trägerschicht für die Kunststoffgrundschicht.
19. Verfahren nach einem der Ansprüche 12 bis 18 einschließlich dem Schritt des Aushärtens des Klebstoffs nach dem Aufbringen der Flockfasern.
20. Verfahren zum Anbringen einer Applikation nach einem der Ansprüche 1 bis 11 auf einem Gewebeträ-

9

EP 0 685 014 B1

10

ger, umfassend den Schritt des Entfernens der Trägerschicht, wenn vorhanden, und Aufschweißen der Applikation auf den Gewebeträger durch Schweißen mit Hochfrequenz.

21. Verfahren nach Anspruch 20 einschließlich dem Schritt, vor dem Schweißen, des Zwischenlegens einer Schicht aus Schaumstoff oder dergleichen zwischen der Grundschicht der Applikation und dem Gewebeträger.

Revendications

1. Appliqué comprenant:

une couche de base d'une matière plastique en feuilles;

un adhésif appliqué sur un côté de la couche de base; et une couche de fibres floquées sur l'adhésif;

caractérisé en ce que ladite couche de fibres floquées est une couche de fibres de floc protéintées qui sont floquées sur l'adhésif à travers un cadre qui présente des ouvertures destinées aux fibres de floc correspondant à au moins une partie d'un motif ou dessin désiré.

2. Appliqué tel que revendiqué à la revendication 1, dans lequel des fibres de floc d'au moins deux couleurs différentes sont floquées sur l'adhésif.

3. Appliqué tel que revendiqué à la revendication 2, dans lequel les fibres de floc de couleurs différentes sont appliquées dans des étapes de floccage séquentielles.

4. Appliqué tel que revendiqué à la revendication 2 ou 3, dans lequel les fibres sont floquées sur l'adhésif selon un motif ou dessin désiré à travers des cadres séparés.

5. Appliqué tel que revendiqué dans l'une quelconque des revendications précédentes, dans lequel les fibres de floc sont en une matière de fibre synthétique, de préférence une fibre de polyamide, de préférence de 1 mm (3,3 DTEX).

6. Appliqué tel que revendiqué dans l'une quelconque des revendications précédentes, dans lequel l'adhésif est appliqué sur la couche de base seulement dans la région sur laquelle les fibres de floc doivent être floquées.

7. Appliqué tel que revendiqué à la revendication 6, dans lequel l'adhésif est appliqué sur la couche de

base à travers un cadre.

8. Appliqué tel que revendiqué dans l'une quelconque des revendications précédentes, dans lequel l'adhésif recevant le floc est un adhésif qui est compatible à la fois avec les fibres de floc et avec la matière de base, de préférence l'adhésif est compatible à la fois avec les fibres de polyamide et avec une matière de film de polyvinylchlorure.

9. Appliqué tel que revendiqué dans l'une quelconque des revendications précédentes, dans lequel la couche de base est un film de polyvinylchlorure.

10. Appliqué tel que revendiqué dans l'une quelconque des revendications précédentes, dans lequel l'appliqué comporte une couche de support sur lequel la couche de base est supportée.

11. Appliqué tel que revendiqué à la revendication 10, dans lequel la couche de base est fixée de manière décollable sur la couche de support, de préférence la couche de support est une matière de papier rigide.

12. Procédé de formation d'un appliqué portant un motif ou un badge à appliquer sur un tissu comprenant les étapes:-

d'application d'un adhésif sur une couche de base d'une matière plastique en feuilles; et

de floccage de fibres de floc protéintées sur l'adhésif à travers un cadre qui présente des ouvertures destinées aux fibres de floc correspondant à au moins une partie d'un motif ou dessin désiré.

13. Procédé tel que revendiqué à la revendication 12, dans lequel il existe des fibres de floc d'au moins deux couleurs différentes et le procédé comporte le floccage de fibres de floc d'une deuxième couleur sur l'adhésif pour former un motif coloré désiré.

14. Procédé tel que revendiqué à la revendication 12 ou 13, dans lequel l'adhésif est appliqué sur la couche de base uniquement dans la région sur laquelle les fibres doivent être floquées.

15. Procédé tel que revendiqué à la revendication 14, dans lequel l'adhésif est appliqué sur la couche de base à travers un cadre.

16. Procédé tel que revendiqué dans l'une quelconque des revendications 12 à 15, dans lequel il existe des fibres de floc d'au moins deux couleurs différentes qui sont appliquées sur l'adhésif dans des étapes de floccage séquentielles.

11

EP 0 685 014 B1

12

17. Procédé tel que revendiqué à la revendication 16, dans lequel les fibres de floc colorées sont floquées sur l'adhésif à travers des cadres séparés.

18. Procédé tel que revendiqué dans l'une quelconque des revendications 12 à 17, comportant l'étape, avant l'application de l'adhésif, de fourniture d'une couche de support pour la couche de base en plastique.

19. Procédé tel que revendiqué dans l'une quelconque des revendications 12 à 18, comportant l'étape de cuisson de l'adhésif après l'application des fibres de floc.

20. Procédé d'application d'un appliqué tel que revendiqué dans l'une quelconque des revendications 1 à 11 sur un support de tissu se composant de l'étape:-

de retrait de la couche de support, si elle existe, et de soudure de l'appliqué au support de tissu par soudage à haute fréquence.

21. Procédé tel que revendiqué à la revendication 20, comportant l'étape, avant le soudage, d'interposition d'une couche de mousse ou de matériau semblable entre la couche de base de l'appliqué et le support de tissu.

30

35

40

45

50

55

EP 0 685 014 B1

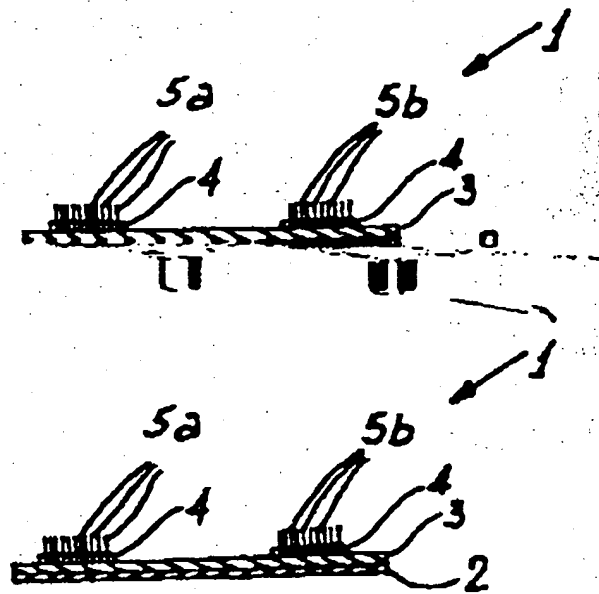


Fig 1

EP 0 885 014 B1

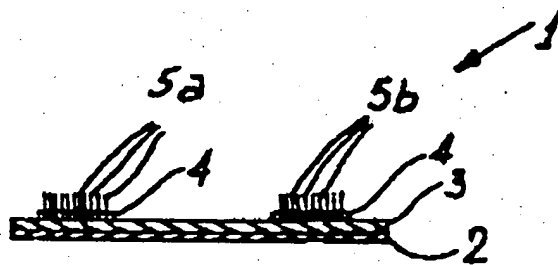


Fig. 1

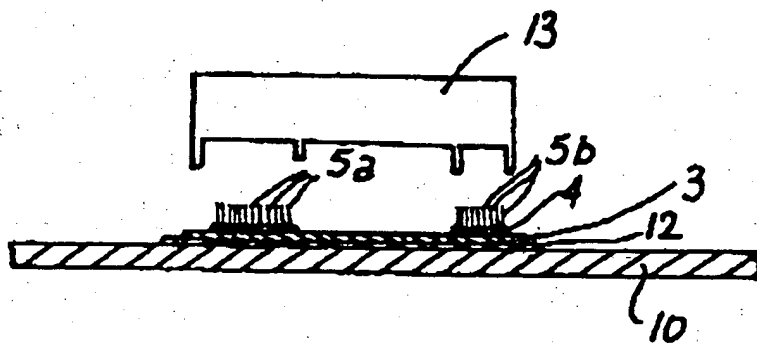


Fig. 2

EP 0 805 014 B1

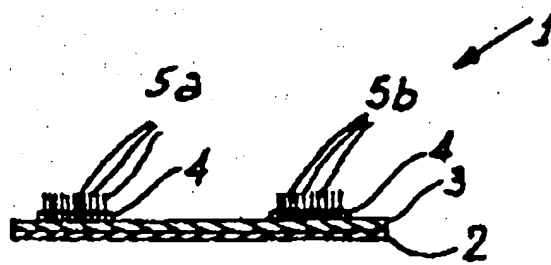


Fig. 1

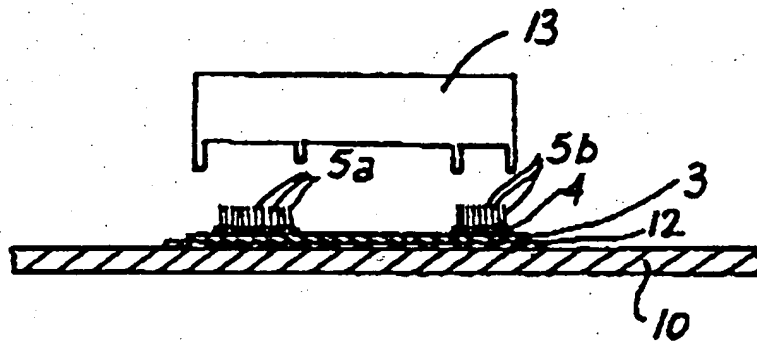


Fig. 2

EP 0 685 014 B1

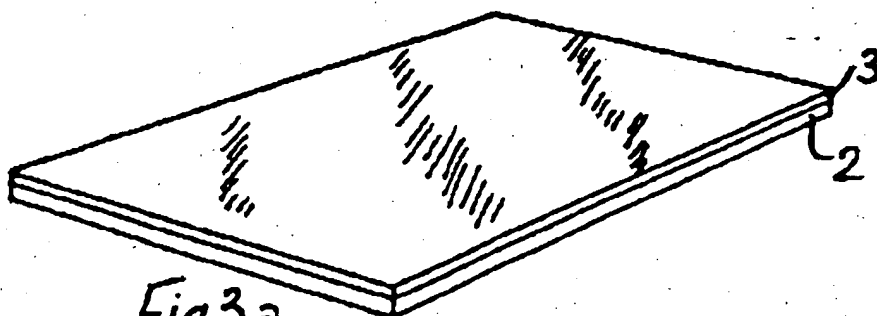


Fig. 3a

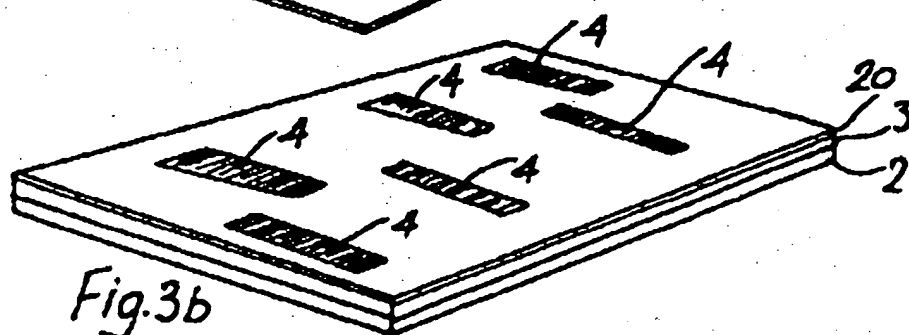
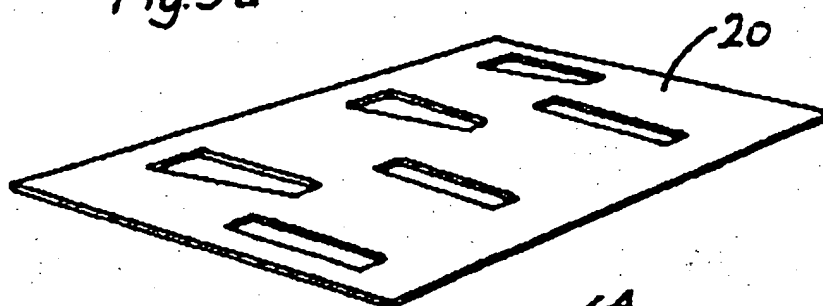


Fig. 3b

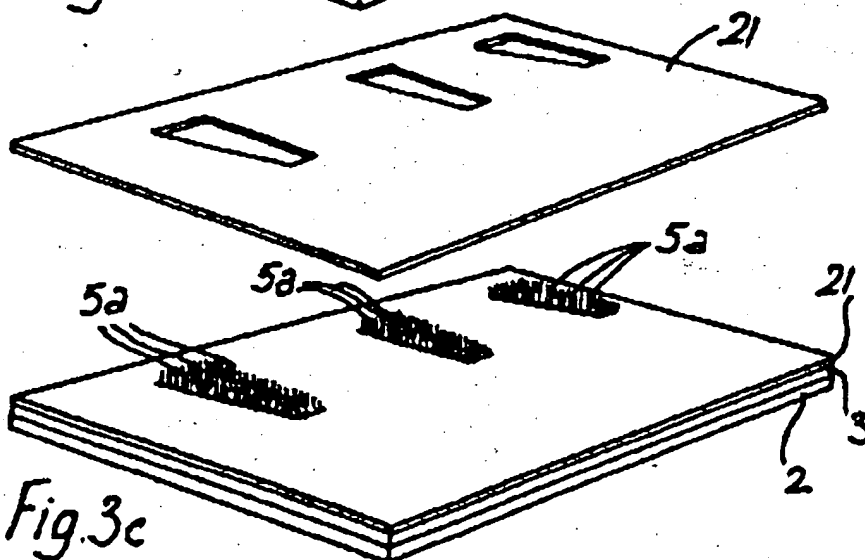


Fig. 3c

EP 0 685 014 B1

